

nel cloud. In these cases, destructive winds, hail, rain, and lightning occur, roofs are blown off, trees are prostrated, and the newspapers record a tornado, whereas to the meteorologist it is strictly speaking only a violent gust of wind, a heavy thunderstorm, a cloudburst, a hailstorm, a straight-line wind, or derecho. There are many terms applicable to these local storms, but it is certainly not proper to call them tornadoes unless the funnel-shaped cloud is actually observed. A destructive wind is not necessarily a tornado.

In the very severe storm that passed eastward, a little north of Washington, D. C., on Wednesday, August 2, 1899, the Editor studied the movements of the atmosphere until driven to shelter by the heavy rain. There was a continuous rumble of thunder from the northern sky, not an occasional clap with its echoes, but a steady angry roar that came apparently from the center of a great disturbance 5 or 10 miles distant in the north and northeast. The cirrus and alto-cumulus overflow from this stormy region extended southward over the observer, but left a portion of the western and southern sky unobscured. The lower cumuli flowed rapidly from the south and southwest toward the storm center. Below these clouds were the lowest scud formed at the upper surface of the layer of cold air that flows out from the region of falling rain and hail; these were seen in the distant north and north-northwest from 1 to 3 miles away. One could see that the severity of the storm was passing far north of the observer. But suddenly an intermediate fracto-cumulus scud was to be seen moving more rapidly and in larger volume from the rainy region in the north. In the progress of these scuds southward they could be distinctly seen to mingle with the southwest current and then return with it so as to describe from a third to a complete circle before they disappeared. Similar distinct whirls among the clouds have been seen, when our thunderstorms are northwest of Washington, forming clouds such as are represented by the concentric bands, shown on Plates XI and XII of the MONTHLY WEATHER REVIEW for May, 1898. Such whirls as this on the outskirts of a region of rain and hail do not owe their origin and maintenance to the updrift of buoyant moist ascending cloudy air. This latter is the mechanical cause of the great whirl disturbance fed by southerly winds rising up over dense cold air or over rising land and condensing in big black clouds.

RAIN GAGES AT HIGH STATIONS.

In continuation of the remarks on page 257 of the MONTHLY WEATHER REVIEW for June, Mr. F. H. Newell, Chief Hydrographer of the United States Geological Survey, desires to say that if at any time there is a chance to secure rainfall observers at high altitudes, he will be glad to cooperate by furnishing the gages.

SPURIOUS TORNADO PHOTOGRAPHS.

The article on this important subject on pages 203-4 of the MONTHLY WEATHER REVIEW for May, 1899, has elicited several interesting comments. The Editor was himself to blame for inserting a paragraph that has caused the only unfavorable comment that we have heard of.

In reference to Mr. P. Connor, of Kansas City, Mo., and Mr. F. Z. Gosewisch, whose names are mentioned in the article, it should be distinctly stated that they simply forwarded these interesting photographs to the Weather Bureau, and, therefore, were not the photographic artists elsewhere referred to in the article.

One correspondent suggests that the Weather Bureau officials may be unnecessarily critical with reference to the tornado photographs. It appears that most persons are satisfied

to look upon the funnel-shaped cloud as the tornado photograph, but this is not meteorology. We wish to obtain for meteorological study prints from the original negatives showing both the ground below and the clouds above in their actual connection with the funnel cloud at any given moment. We do not wish to have the photographer alter the appearance of the funnel by especially intense printing, or by substituting another foreground or touching up the surrounding clouds. Every change made by him for the purpose of beautifying or of intensifying some special feature is likely to injure the photograph for our purposes, although it may render the picture more acceptable to the general public.

We have a few genuine photographs of tornado clouds; that is to say, neither by retouching nor by special printing processes have the meteorological features been appreciably altered. We shall be glad to learn of others that are equally reliable, as it will be a serious disappointment if the measurements and calculations that are being made with reference to tornadoes turn out to be based upon unreliable photographic prints.

GENERAL FORECASTS FOR WASHINGTON, OREGON, AND IDAHO.

On the daily weather map issued at Portland, Oreg., on July 11, Mr. Pague publishes the following:

Weather synopsis and general forecast for Washington, Oregon, and Idaho.

The map this morning presents the first pure type of summer weather conditions for the year 1899. Summer and winter weather types first appeared in former years as follows:

Summer.		Winter.	
1895.....	April 20	1895.....	November 12
1896.....	June 18	1896.....	October 20
1897.....	April 11	1897.....	October 19
1898.....	July 7	1898.....	October 19
1899.....	July 11		

The morning map of June 12 showed an almost pure summer high. The conditions that morning lacked a few distinct characteristics, which are fully shown this morning. Summer weather really began June 12, though to-day marks the pure type. From June 12 to date there has been a succession of highs moving from the ocean on the west or southwest, becoming central along the Washington coast, but not moving, as a whole, eastward over Washington; it was only the absence of this movement that prevented the highs being classed as "summer highs." The high shown over northwestern Washington this morning was off Cape Mendocino the morning of the 7th; its movement northward has been sluggish, but it is now moving eastward on about the forty-ninth degree, north latitude, the path of the summer highs. For months temperatures below the normal have prevailed, the sunshine has been deficient in amount, and up to June 5 rains were frequent. The change to seasonable weather conditions has now taken place, and regular periods of warm and cool weather will prevail. The presence of summer weather conditions makes possible the occurrence of hot northeast winds east of the Cascades, and while such are not probable within the next several days, they may occur with the movement of the next high, which will be about Monday or Tuesday next. Sprinkles of rain from the highs west of the Cascades and showers from thunderstorms east of them are probable at intervals, and rains from these causes are all that will occur until the appearance of winter weather conditions in September or October. Summer conditions are well marked by several days of cool weather with high fog, followed by several days of cloudless weather and higher temperatures, lasting about three days, then a recurrence to cooler. Under the recurrent conditions sprinkles of rain may occur.

THE PRESENT STATUS OF METEOROLOGY.

The Quarterly Journal of the Royal Meteorological Society for April, 1899, was received during the month of July and contains two articles that will greatly interest American readers.